IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Paul Nicholls	§	Group Art Unit: 2855
Serial No.: 10/530,502	§	Examiner: Verbitsky, Gail Kaplan
Filed: August 21, 2006	§	
For: A Vessel Having Temperature Monitoring Apparatus	§	Atty Docket: 101.0057

Assistant Commissioner
for Patents
Washington, D.C. 20231

CERTIFICATE OF MAILING
37 C.F.R. 1.8

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December 1, 2009 — Robert A. Van Someren
Date

Assistant Commissioner:

APPEAL BRIEF PURSUANT TO 37 C.F.R. §§ 41.31 AND 41.37

This Appeal Brief is being filed in furtherance to the Notice of Appeal mailed on October 8, 2009 and received by the Patent Office on October 13, 2009.

1. REAL PARTY IN INTEREST

The real party in interest is Schlumberger Technology Corporation, the Assignee of the above-referenced application by virtue of the Assignment recorded at reel 017838, frame 0567.

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2. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any other appeals or interferences related to this Appeal. The undersigned is Appellant's legal representative in this Appeal. Schlumberger Technology

Corporation, the Assignee of the above-referenced application as evidenced by the documents listed above, will be directly affected by the Board's decision in the pending appeal.

3. STATUS OF CLAIMS

Claims 1-7, 9-16, 18, 20-31 were finally rejected by the Examiner as of the final Office Action dated July 7, 2009. Claims 8, 17, 19 were canceled without prejudice prior to the final Office Action dated July 7, 2009. The rejection of claims 1-7, 9-16, 18, 20-31 is appealed.

4. STATUS OF AMENDMENTS

The most recent amendment was in a Reply and Amendment, filed under certificate of mailing on April 8, 2009, in which claim 1 was amended. However, no amendments have been filed after the final Office Action dated July 7, 2009.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

a.) Independent Claim 1

Independent claim 1 is directed to a vessel (2) which comprises a body (4), a conduit (6), and a distributed temperature system (12). The conduit (6) is disposed near the body (4), and the distributed temperature system (12) comprises an optical fiber (14) positioned in the conduit (6) to monitor temperature in the body (4). *(See, for example, page 4, line 14-24).* The vessel (2) also comprises a control unit (50). *(See, for example, page 8, lines 2-4).* Additionally, vessel (2) comprises a tray (22), an outlet weir (24), and a downcomer (26) positioned within the body (4). The conduit (6) and optical fiber (14) extend such that they provide a temperature profile of temperatures in at least a portion of the body (4) containing the tray (22), outlet weir (24), and downcomer (26). *(See, for example, page 5, lines 4-17 and page 6, lines 11-17).* A process is performed within the vessel (2) and the control unit (50) automatically controls parameters in the body (4) depending on the temperature profile to ensure that the process is within an acceptable range. *(See, for example, page 8, lines 2-24).*

b.) Independent Claim 18

Independent claim 18 is directed to a method for monitoring a vessel (2). The method comprises disposing a conduit (6) near a body (4) of the vessel (2) and monitoring temperature in the body (4) by use of a distributed temperature system (12) which includes an optical fiber (14) located within the conduit (6). *(See, for example, page 4, line 14-24).* The method further comprises extending the conduit (6) and the optical fiber (14) so they provide a temperature profile of temperatures in at least a portion of the body (4). *(See, for example, page 5, lines for-13).* The method further comprises automatically controlling parameters in the body (4) according to the temperature profile obtained by the distributed temperature system (12). *(See, for example, page 8, lines 2-24).*

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

a.) Whether claims 18, 20-23, 25 are unpatentable under 35 U.S.C. § 102(b) as anticipated by the Hartog et al. reference, US Patent No.: 5,821,861.

b.) Whether claims 1-3, 5-7, 10 are unpatentable under 35 U.S.C. § 103(a) as obvious based on the Hartog et al. reference, in view of the DeBruin reference, US Patent Application Publication No.: 2008/0312406.

c.) Whether claims 24, 26-31 are unpatentable under 35 U.S.C. § 103(a) as obvious based on the Hartog et al. reference, in view of the Anderson et al. reference, US Patent No.: 4,703,174, and the Mercer reference, US Patent No.: 2,499,105.

d.) Whether claims 9, 12-15 are unpatentable under 35 U.S.C. § 103(a) as obvious based on the Hartog et al. reference and the DeBruin reference, in view of the Anderson et al. reference and the Mercer reference.

e.) Whether claims 24, 26-31 are unpatentable under 35 U.S.C. § 103(a) as obvious based on the Hartog et al. reference, in view of the Chuang et al. reference, US Patent No.: 7,211,702, and the Camson reference.

f.) Whether claims 11-16 are unpatentable under 35 U.S.C. § 103(a) as obvious based on the Hartog et al. reference and the DeBruin reference, in view of the Chuang et al. reference and the Camson reference.

g.) Whether claims 24, 26-31 are unpatentable under 35 U.S.C. § 103(a) as obvious based on the Hartog et al. reference, in view of the Anderson et al. reference and the Gamson reference, US Patent No.: 3,440,865.

h.) Whether claims 9, 12-15 are unpatentable under 35 U.S.C. § 103(a) as obvious based on the Hartog et al. reference and the DeBruin reference, in view of the Anderson et al. reference and the Gamson reference.

7. **ARGUMENT**

a.) Rejection of claims 18, 20-23, 25 as unpatentable under 35 U.S.C. § 102(b) as anticipated by the Hartog et al. reference, US Patent No.: 5,821,861.

- Claims 18, 20-23 and 25

Claims 18, 20-23 and 25 were improperly rejected as anticipated under the Hartog et al. reference, and the rejection should be withdrawn.

The Hartog et al. reference discloses a system for monitoring shell temperatures in a reactor. The system comprises a bundle of optical fibers 20 that are located in a tubular metal sheath 24 positioned on the outside of a shell 16. The optical fibers 20 are connected to processing equipment 28 by a fiber optic field junction box 22. (See column 2, lines and 46-52). However, the processing equipment 28 is described as a control system for the optical fibers. For example, the processing means 28 comprises a laser source which launches pulses of light (See column 3, lines 1-3) used in providing the spatial resolution of the system, and the processing means 28 is described as a "reflectometry processing means 28" (See column 5, lines 23-25). Accordingly, the Hartog et al. reference does not teach the automatic control of parameters based on output from a distributed temperature system. For example, the Hartog et al. reference provides no description or teaching related to an optical fiber distributed temperature system that monitors temperature in a body in combination with a control unit that automatically controls parameters in the body depending on the temperature profile.

On page 12 of the July 7, 2009 final Office Action, a statement is made that "the Examiner's position that turning on cooling air when the wall (body) is hot in order to limit its temperature (change parameter) which is inherently done automatically, satisfies the Applicant's claimed invention." However, Applicant respectfully responds that this statement is not an

accurate characterization of the Hartog et al. reference which does not appear to use any type of automatic control based on temperature profile. The "cooling air" is part of a recalibration system that can be used when an operator wishes to re-map the fiber loop system.

The "cooling air" is provided through air nozzles designed to cause localized cooling, but this localized cooling is provided when necessary to "re-map" the system after there has been a change in configuration of the fiber loop. An air line 30 is installed alongside the reactor vessel and has small holes 34 drilled along its entire length to form a series of nozzles. Compressed air is flowed through the air line 30 and exits through the holes 34 in small jets of air which impinge on the shell to cause localized cooling of a band-shaped region of the shell. The cooled areas that cross the fiber-containing sheath 24 show up in a temperature trace produced by the temperature monitoring system 28. (See column 3, lines 32-50).

Accordingly, the Hartog et al. reference fails to disclose elements of the subject claims and therefore the reference is not an anticipatory reference. By way of example, the Hartog et al. reference fails to disclose or suggest monitoring temperature in a body by use of a "distributed temperature system including an optical fiber that is located within the conduit" combined with "automatically controlling parameters in the body depending on the temperature profile obtained by the distributed temperature system" as recited in independent claim 18. Therefore, the rejection of independent claim 18 under 35 USC 102(b) must be withdrawn.

Claims 20-23 and 25 ultimately depend from independent claim 18 discussed above and recite additional unique elements. Accordingly, the rejection under 35 USC 102(b) also should be withdrawn with respect to these dependent claims.

b.) Rejection of claims 1-3, 5-7, 10 as unpatentable under 35 U.S.C. § 103(a) as obvious based on the Hartog et al. reference, in view of the DeBruin reference, US Patent Application Publication No.: 2008/0312406.

- <u>Claims 1-3, 5-7 and 10</u>

Claims 1-3, 5-7 and 10 were improperly rejected as obvious over the Hartog et al. reference in view of the DeBruin reference. No prima facie case of obviousness has been established, and the rejection should be withdrawn.

In the July 7, 2009 Office Action, the Hartog et al. reference is characterized as disclosing that "processor 28 obtains temperature distributed data from the sensor, monitors it (body parameters) and makes/ performing a process (automatic) control by controlling heating element (controlling temperature within an acceptable range)." (See July 7, 2009 Office Action, page 3). However, Applicant disagrees with this characterization and respectfully submits the Hartog et al. reference fails to make such disclosure. As discussed above, the processor 28 of the Hartog et al. reference is described as processing equipment for use with optical fibers 20. The processing means 28 comprises a laser source (see column 3, lines 1-3) which is used in providing the spatial resolution of the system and is described as a reflectometry processing means 28. (See column 5, lines 23-25). As mentioned previously, the Hartog et al. reference provides no description or teaching related to a distributed temperature system that monitors temperature in a body in combination with a control unit that automatically controls parameters in the body depending on the temperature profile. Accordingly, the Hartog et al. does not provide the teachings for which it is cited in the rejection of claims 1-3, 5-7, 10, and the rejection under 35 USC 103(a) should be withdrawn.

A further statement is made on page 3 of the July 7, 2009 Office that the Debruin reference "states that some reactors, especially ester exchange reactors have such internals as weirs, trays, downcomers, and also need temperature control, and thus knowledge of temperature inside reactor." However, no specific reference citations were provided and Applicant was unable to find these teachings in the Debruin reference. The Debruin reference teaches employment of at least one weir along the interior surface of an esterification pipe reactor. (See page 26, paragraph 0374, and Figure 4). Additionally, the Debruin reference describes the use of a weir or weirs to control liquid levels in each pipe level of a reactor. (See page 28, paragraphs 0402-0406, and Figure 9). However, Applicant respectfully submits the reference does not

disclose the other elements for which it is relied on to support the present rejection under 35 USC 103(a). Accordingly, no prima facie case of obviousness can be established and the rejection of claims 1-3, 5-7, 10 should be withdrawn.

By way of specific examples, the combination of references fails to disclose, teach or suggest a distributed temperature system "comprising an optical fiber positioned in the conduit" combined with a control unit that "automatically controls parameters in the body depending on the temperature profile to ensure that the process is within an acceptable range" as recited in independent claim 1. The references further fail to disclose, teach or suggest "a tray, an outlet weir, and a downcomer positioned within the body" combined with the conduit and the optical fiber providing a temperature profile of temperatures in at least a portion of the body "containing the tray, the outlet weir and the downcomer" as also recited in independent claim 1. Accordingly, no prima facie case of obviousness has been established and the rejection under 35 USC 103(a) should be withdrawn with respect to independent claim 1 and its dependent claims 2-3, 5-7 and 10.

c.) **Rejection of claims 24 and 26-31 as unpatentable under 35 U.S.C. § 103(a) as obvious based on the Hartog et al. reference, in view of the Anderson et al. reference, US Patent No.: 4,703,174, and the Mercer reference, US Patent No.: 2,499,105.**

- <u>Claims 24 and 26-31</u>

Claims 24 and 26-31 were improperly rejected as obvious over the Hartog et al. reference in view of the Anderson et al. reference and the Mercer reference. No prima facie case of obviousness has been established, and the rejection should be withdrawn.

As discussed above with respect to independent claim 18, the Hartog et al. reference fails to disclose or suggest elements of the independent claim or its dependent claims. The Anderson et al. and Mercer references provide no additional disclosure that would obviate the deficiencies

of the Hartog et al. reference. Accordingly, the rejection under 35 USC 103(a) should be withdrawn.

Additionally, the Anderson et al. reference is relied on for the proposition that: "a fiber optic sensor for sensing both pressure and temperature could be used along with a distillation vessel." (See January 7, 2009 Office Action, page 4). However, the Anderson et al. reference instead teaches a temperature sensor 100 having a housing 102, a carrier 104, and temperature sensitive members 106. Each temperature sensitive member 106 comprises a pair of bimetallic strips that react to changes in temperature. (See column 7, lines 29-61). An optical fiber 16 is used as a communication line for carrying a light signal. When exposed to heat, the bimetallic strips bow and cause carrier 104 to move away from optical fiber 16. As a result less light is reflected back into the optical fiber from a reflective surface 112. (See column 8, lines 3-16).

Accordingly, the Anderson et al. reference fails to teach the fiber optic sensor and distillation vessel for which it is cited. In fact, the Anderson et al. reference teaches away from this approach by utilizing a conventional bimetallic sensor to detect temperature changes. Without the teachings of the present application, one of ordinary skill in the art would be led away from the approach taught and claimed in the presently pending application in which a distributed temperature sensor is formed with an optical fiber. Consequently, the cited references fail to disclose, teach or suggest the elements of the subject claims and no prima facie case of obviousness can be established. The rejection of claims 24 and 26-31 under 35 USC 103(a) should be withdrawn.

d.) Rejection of claims 9 and 12-15 as unpatentable under 35 U.S.C. § 103(a) as obvious based on the Hartog et al. reference and the Debruin reference, in view of the Anderson et al. reference and the Mercer reference.

- <u>Claims 9 and 12-15</u>

Claims 9 and 12-15 were improperly rejected as obvious over the Hartog et al. reference and the Debruin reference in view of the Anderson et al. reference and the Mercer reference. No prima facie case of obviousness has been established, and the rejection should be withdrawn.

Claims 9 and 12-15 ultimately depend from independent claim 1 and recite additional elements. As discussed above with respect to independent claim 1, the Hartog et al. reference and the Debruin reference fail to disclose or suggest elements of the independent claim or its dependent claims. The Anderson et al. and Mercer references provide no additional disclosure that would obviate the deficiencies of the Hartog et al. reference and the Debruin reference. As described previously, the Anderson reference also fails to provide the teachings for which it is cited in the Office Action. Accordingly, the rejection of claims 9 and 12-15 under 35 USC 103(a) should be withdrawn.

e.) **Rejection of claims 24 and 26-31 as unpatentable under 35 U.S.C. § 103(a) as obvious based on the Hartog et al. reference, in view of the Chuang et al. reference, US Patent No.: 7,211,702, and the Camson reference.**

- <u>Claims 24 and 26-31</u>

Claims 24 and 26-31 were improperly rejected as obvious over the Hartog et al. reference in view of the Chuang et al. reference and the Camson reference. No prima facie case of obviousness has been established, and the rejection should be withdrawn.

Claims 24 and 26-31 ultimately depend from independent claim 18 and recite additional elements. As discussed above with respect to independent claim 18, the Hartog et al. reference fails to disclose or suggest elements of the independent claim 18 or its dependent claims. The Chuang et al. reference provides no additional disclosure that would obviate the deficiencies of the Hartog et al. reference. Furthermore, Applicant did not find a patent number or other reference number associated with the cited Camson reference. (In a subsequent rejection, a Gamson reference is cited with a corresponding US patent number 3,440,865, but the Gamson

reference also would fail to obviate the deficiencies of disclosure found in the other cited references.) Accordingly, the rejection should be withdrawn.

The Chuang et al. reference describes a catalytic distillation column 12 having a body 22 and an interior cavity 30. (See column 7, lines 38-40). The Chuang et al. invention is designed to provide a process by which, in part, an olefin is hydrated to produce a corresponding alcohol under mild conditions. In another aspect of the invention, a process is provided to remove water from an azeotropic mixture of an alcohol and water to allow recovery of the corresponding substantially anhydrous alcohol under mild conditions. (See column 3, lines 41-59). However, the Chuang et al. reference does not appear to describe control over temperature and pressure of a vessel by valves and automatic controllers to keep process parameters within an acceptable range, as stated in the Office Action. (See July 7, 2009 Office Action, page 6). Accordingly, the disclosure of the cited references is not sufficient to support a prima facie case of obviousness under 35 USC 103(a), and the rejection should be removed.

f.) Rejection of claims 11-16 as unpatentable under 35 U.S.C. § 103(a) as obvious based on the Hartog et al. reference and the Debruin reference, in view of the Chuang et al. reference and the Camson reference.

- <u>Claims 11-16</u>

Claims 11-16 were improperly rejected as obvious over the Hartog et al. reference and the Debruin reference in view of the Chuang et al. reference and the Camson reference. No prima facie case of obviousness has been established, and the rejection should be withdrawn.

Claims 11-16 ultimately depend from independent claim 1 and recite additional elements. As discussed above with respect to independent claim 1, the Hartog et al. reference and the Debruin reference fail to disclose or suggest elements of the independent claim 1 or its dependent claims. The Chuang et al. reference provides no additional disclosure that would obviate the deficiencies of the Hartog et al. reference and the Debruin reference. Furthermore, Applicant did

not find a patent number or other reference number associated with the cited Camson reference. (In a subsequent rejection, a Gamson reference is cited with a corresponding US patent number 3,440,865, but the Gamson reference also would fail to obviate the deficiencies of disclosure found in the other cited references.) Accordingly, no prima facie case of obviousness can be established with respect to claims 11-16, and the rejection of claims 11-16 should be withdrawn.

g.) Rejection of claims 24 and 26-31 as unpatentable under 35 U.S.C. § 103(a) as obvious based on the Hartog et al. reference, in view of the Anderson et al. reference and the Gamson reference, US Patent No.: 3,440,865.

- <u>Claims 24 and 26-31</u>

Claims 24 and 26-31 were improperly rejected as obvious over the Hartog et al. reference in view of the Anderson et al. reference and the Gamson reference. No prima facie case of obviousness has been established, and the rejection should be withdrawn

Claims 24, 26-31 ultimately depend from independent claim 18 and recite additional elements. As discussed above with respect to independent claim 18, the Hartog et al. reference fails to disclose or suggest elements of the independent claims or their dependent claims. The Anderson et al. and Gamson references provide no additional disclosure that would obviate the deficiencies of the Hartog et al. reference. Accordingly, the rejection should be withdrawn.

Furthermore, the Anderson et al. reference is again relied on for the proposition that "a fiber optic sensor for sensing pressure and temperature could be used along with a distillation vessel." (See July 7, 2009 Office Action, page 9). As described above, the Anderson et al. reference instead teaches a temperature sensor 100 having a housing 102, a carrier 104, and temperature sensitive members 106. Each temperature sensitive member 106 comprises a pair of bimetallic strips that react to changes in temperature. (See column 7, lines 29-61). An optical fiber 16 is used as a communication line for carrying a light signal. When exposed to heat, the bimetallic strips bow and cause carrier 104 to move away from optical fiber 16. As a result less

light is reflected back into the optical fiber from a reflective surface 112. (See column 8, lines 3-16).

The Anderson et al. reference again fails to teach the fiber optic sensor and distillation vessel for which it is cited and teaches away from this approach by utilizing a conventional bimetallic sensor to detect temperature changes. Consequently, the cited references fail to disclose, teach or suggest elements of the subject claims and no prima facie case of obviousness can be established. Accordingly, the rejection of claims 24 and 26-31 under 35 USC 103(a) should be withdrawn.

h.) Rejection of claims 9 and 12-15 as unpatentable under 35 U.S.C. § 103(a) as obvious based on the Hartog et al. reference and the Debruin reference, in view of the Anderson et al. reference and the Gamson reference.

- <u>Claims 9 and 12-15</u>

Claims 9 and 12-15 were improperly rejected as obvious over the Hartog et al. reference and the Debruin reference in view of the Anderson et al. reference and the Gamson reference. No prima facie case of obviousness has been established, and the rejection should be withdrawn.

Claims 9, 12-15 ultimately depend from independent claim 1 and recite additional elements. As discussed above with respect to independent claim 1, the Hartog et al. and Debruin references fail to disclose or suggest elements of independent claim 1 or its dependent claims. The Anderson et al. and Gamson references provide no additional disclosure that would obviate the deficiencies of the Hartog et al. reference and the Debruin reference. Furthermore, Applicant respectfully submits the Anderson et al. reference does not disclose the elements for which it is relied on to support the rejection, as discussed above. Accordingly, no prima facie case of obviousness can be established, and the rejection of claims 9 and 12-15 under 35 USC 103(a) should be withdrawn.

It should be further noted that the July 7, 2009 Office Action does not cite any references in support of the rejection of dependent claim 4. Accordingly, the rejection of dependent claim 4 is unsupported and should be withdrawn.

In view of the above remarks, Applicant respectfully submits the Examiner has provided no supportable position or evidence that any of the claims 1-7, 9-16, 18 and 20-31 is anticipated under 35 U.S.C. § 102(b) or obvious under 35 U.S.C. § 103(a). Accordingly, Applicant respectfully requests that the Board find claims 1-7, 9-16, 18 and 20-31 patentable over the art of record, withdraw all outstanding rejections, and allow claims 1-7, 9-16, 18 and 20-31.

The Commissioner is hereby authorized to charge the requisite fee of $540.00 (filing a brief in support of a Notice of Appeal) to the credit card listed on the attached form PTO-2038. However, if the amount listed thereon is insufficient, or if the amount is unable to be charged to the credit card for any other reason, the Commissioner is authorized to charge Deposit Account No.: 50-3054.

Respectfully submitted,

Date: December 1, 2009

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8. CLAIMS APPENDIX

1. A vessel, comprising:

a body; a conduit disposed near the body; a distributed temperature system for monitoring temperature in the body and comprising an optical fiber positioned in the conduit; a control unit; and a tray, an outlet weir, and a downcomer positioned within the body, the conduit and the optical fiber extending such that they provide a temperature profile of temperatures in at least a portion of the body containing the tray, the weir, and the downcomer, wherein a process is performed within the vessel; and the control unit automatically controls parameters in the body depending on the temperature profile to ensure that the process is within an acceptable range.

2. The vessel of claim 1, further comprising a control unit for automatically controlling parameters in the body depending on the temperature profile obtained by the distributed temperature system.

3. The vessel of claim 1, wherein the conduit is a metal conduit.

4. The vessel of claim 3, wherein the metal conduit is constructed from stainless steel.

5. The vessel of claim 1, wherein the conduit is located outside of the body.

6. The vessel of claim 1, wherein the conduit is located inside of the body.

7. The vessel of claim 1, wherein the optical fiber is pumped into the conduit by way of fluid drag.

9. The vessel of claim 1, wherein at least one of the parameters is pressure.

10. The vessel of claim 1, wherein at least one of the parameters is temperature.

11. The vessel of claim 1, wherein: the process has a plurality of stages within the vessel; and the control unit controls the parameters in the body depending on the temperature profile to ensure that each stage of the process is within an acceptable range.

12. The vessel of claim 1, wherein the vessel is part of a distillation system.

13. The vessel of claim 12, wherein the distillation system separates liquid components for subsequent processing.

14. The vessel of claim 1, wherein vapour enters the vessel at one end of the vessel and liquid enters the vessel at another end of the vessel.

15. The vessel of claim 14, wherein the vapour enters at a top end of the vessel and the liquid enters at a bottom end of the vessel.

16. The vessel of claim 1, further comprising: a plurality of valves that control parameters within the body; and the parameters are controlled depending on the temperature profile to ensure that a process taking part in the body is within an acceptable range.

18. A method for monitoring a vessel, comprising:

disposing a conduit near a body of the vessel;

monitoring temperature in the body by use of a distributed temperature system including an optical fiber that is located within the conduit;

extending the conduit and the optical fiber such that they provide a temperature profile of temperatures in at least a portion of the body; and

automatically controlling parameters in the body depending on the temperature profile obtained by the distributed temperature system.

20. The method of claim 18, wherein the disposing step comprises disposing the conduit outside of the body.

21. The method of claim 18, wherein the disposing step comprises disposing the conduit inside of the body.

22. The method of claim 18, further comprising pumping the optical fiber into the conduit by way of fluid drag.

23. The method of claim 18, further comprising: performing a process within the vessel; and automatically controlling parameters in the body depending on the temperature profile to ensure that the process is within an acceptable range.

24. The method of claim 23, wherein at least one of the parameters is pressure.

25. The method of claim 23, wherein at least one of the parameters is temperature.

26. The method of claim 23, further comprising automatically controlling the parameters depending on the temperature profile to ensure that each of a plurality of stages of the process is within an acceptable range.

27. The method of claim 18, further comprising separating liquid components in the vessel for subsequent processing.

28. The method of claim 18, further comprising feeding vapour at one end of the vessel and feeding liquid at another end of the vessel.

29. The method of claim 28, further comprising feeding vapour at a top end of the vessel and feeding liquid at a bottom end of the vessel.

30. The method of claim 18, further comprising: controlling parameters within the body by the use of a plurality of valves; and controlling the parameters depending on the temperature

profile to ensure that a process taking part in the body is within an acceptable range.

31. The method of claim 30, further comprising automatically controlling the parameters depending on the temperature profile to ensure that a process taking part in the body is within an acceptable range.

9. EVIDENCE APPENDIX

Not Applicable

10. RELATED PROCEEDINGS APPENDIX

Not Applicable